

CLAIMS

1. A clamp mechanism of a throwaway tip for pressing a throwaway tip, the clamp mechanism comprising:

5 a tool body having a tip body;
a fitting hole formed through the tip body;
a tip fitting seat formed in the tool body;
a contact portion of the tip body formed in an opening of the fitting hole; and

10 a clamp member comprising:

a shaft portion inserted into the fitting hole;

a head portion which passes through the fitting hole, the head portion having an outer diameter equal to or greater than that of the shaft portion and clamping the throwaway tip to the tip fitting seat by allowing the clamp member to advance toward the tip fitting seat in a central axis direction of the shaft portion; and

15 a section of a back surface of the head portion, the section being perpendicular to the central axis direction and having a circle shape centered at the central axis line;

20 wherein a part of the back surface of the head portion comes into contact with the contact portion formed in an opening of the fitting hole when the clamp member is allowed to advance.

2. The clamp mechanism according to Claim 1, wherein the contact portion of the tip body has a crescent shape which is

convex from the inner circumference of the fitting hole toward the outer circumference as seen in the direction along the center line of the fitting hole.

5 3. The clamp mechanism according to Claim 1, wherein the central axis line of the clamp member is tilted with respect to a center line of the fitting hole.

 4. The clamp mechanism according to Claim 3, further
10 comprising:

 a first portion of the contact portion, the first portion being located in a plane including the central axis line of the clamp member and the center line of the fitting hole, and is more convex in the direction along the central axis line
15 than other portions.

 5. The clamp mechanism according to Claim 3, further comprising:

 a plurality of the fitting holes formed in the tip body,
20 each of the plurality of fitting holes having respective center lines parallel to each other;

 a plurality of the clamp members provided in the tool body, each of the plurality of clamp members corresponding to a respective fitting hole; and

25 each of the plurality of clamp members having a respective central axis line which extends in a parallel direction or in a direction intersecting each other at an intersection angle of 5° or less as seen in the direction along

the center lines.

6. The clamp mechanism according to Claim 3, further comprising:

5 a plurality of the fitting holes formed in the tip body, each of the plurality of fitting holes having a respective center line parallel to each other,

a plurality of the clamp members provided in the tool body, each of the plurality of clamp members corresponding to
10 a respective fitting hole,

a mark provided in the tip body to indicate an order in which the clamp members advance toward the tip fitting seat.

7. The clamp mechanism according to Claim 1, further
15 comprising:

a screw portion provided at an end of the shaft portion opposite to the head portion in the clamp member, the screw portion being inserted into the tool body,

wherein the clamp member is allowed to advance toward the
20 tip fitting seat while rotating around the central axis line over the whole circumference.

8. The clamp mechanism according to Claim 1, further comprising:

25 a large-diameter portion having an outer diameter larger than that of the fitting hole, the large-diameter portion being provided at an end of the shaft portion opposite to the head portion in the clamp member.

9. A clamp mechanism for a milling tool, the clamp mechanism comprising:

a clamp member having a back surface and a head portion;

5 a tool body having a disk shape, the tool body being centered on an axis line of rotation, the tool body comprising:

an outer circumferential surface; and

a lower surface;

10 a tip pocket formed on an outer circumference of the milling tool, the tip pocket having a concave shape;

a tip fitting seat formed in a wall of the tip pocket, the tip fitting seat being directed towards the direction of rotation of the milling tool;

15 a tip body having a substantially square shape, the tip body comprising a plurality of cutting edges formed at a corner portion of the tip body;

a fitting hole formed through the tip body of the tool body;

20 a plurality of contact portions formed in the opening of the fitting hole, each of the plurality of contact portions forming a crescent shape as seen in the direction along a center line,

wherein a part of the back surface of the head portion of
25 the clamp member contacts a respective one of the plurality of contact portions which is located on a side opposite to a respective cutting edge to clamp the tip body.

10. A clamp mechanism of a throwaway tip for pressing a throwaway tip, the clamp mechanism comprising:

a plurality of the fitting holes formed in a tip body of a tool holder, each of the plurality of fitting holes having
5 respective center lines parallel to each other;

a plurality of contact portions of the tip body formed in an opening of the fitting hole; and

a plurality of the clamp members provided in the tool body, each of the plurality of clamp members corresponding to
10 a respective fitting hole, and each of the plurality of clamp members comprising:

a shaft portion inserted into the fitting hole;

a head portion which passes through the fitting hole, the head portion having an outer diameter equal to or
15 greater than that of the shaft portion and clamping the throwaway tip to the tip fitting seat by allowing the clamp member to advance toward the tip fitting seat in a central axis direction of the shaft portion; and

a section of a back surface of the head portion, the
20 section being perpendicular to the central axis direction and having a circle shape centered at the central axis line;

wherein a part of the back surface of the head portion comes into contact with the respective contact portion formed
25 in an opening of the fitting hole when the respective clamp member is allowed to advance.